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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.		
10/553,056	10/12/2005	Woo Suk Chung	3449-0543PUS1	2091		
2252	7590	06/25/2008				
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747	EXAMINER					
	KASTURE, DNYANEESH G					
	ART UNIT		PAPER NUMBER			
	3746					
NOTIFICATION DATE		DELIVERY MODE				
06/25/2008		ELECTRONIC				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/553,056	Applicant(s) CHUNG ET AL.
	Examiner DNYANESH KASTURE	Art Unit 3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 12 October 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/02505)
 Paper No(s)/Mail Date 12 Oct 05
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The word "solvent" appears to have been used in a non standard manner (Ex. Page 15, Line 20) Appropriate clarification/correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 7-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "solvent" in claim 7 and 11 is generally accepted to mean a medium (normally a liquid medium) which is capable of dissolving a solute (a solid substance). It is not clear how a member can be a solvent. The term is indefinite because the specification does not clearly redefine the term. Since Claims 8-10 and 12-14 depend on claims 7 and 11 respectively, these dependant claims are also indefinite. It is assumed that "solvent" refers to a portion of a fixing (rivet) member that is melted.

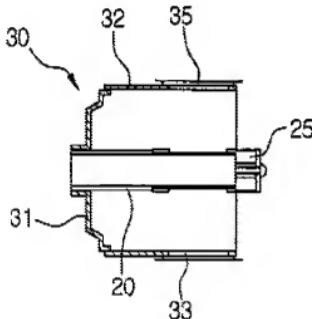
Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 - 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al (US PG Pub 20020057973 A1) in view of Tatukawa et al (US Patent 4,701,654 A)

**FIG.2
(PRIOR ART)**

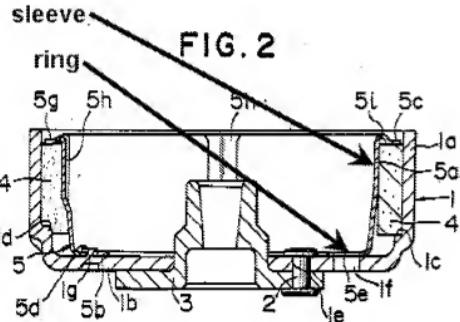


6. In Re claim 1, with reference to Figure 2 depicted above, Choi et al discloses a piston assembly (Paragraph [0026]) comprising:

Art Unit: 3746

- a hollow cylinder shaped magnet sleeve (32) having a magnet (33) bonded together by magnet cover (35) on the external circumferential surface
- a hollow cylinder shaped piston (20), inserted into a hollow space of the magnet sleeve as depicted
- a hollow disc shaped ring (31) fixed to the piston (20) by welding process, and fixed to magnet sleeve (32) also by welding process. Paragraph [0013], Lines 4-6 state: "For example, the piston 20 and linking member 31 are welded together, as are the linking member 31 and the magnet holder 32". The magnet sleeve and piston are therefore coupled to each other.

7. However, Choi et al does not disclose that a shrink fitting process is used to fix the piston to the ring. Nevertheless, Choi et al discloses that there are other methods for forceful coupling between parts as stated in column 2, line 1: "forceful coupling methods, such as force fit, welding, etc., to secure the parts together". In accordance with MPEP 2113, the method of forming a device is not germane to the issue of patentability of the device itself. In this case, the claim is to a piston assembly which is a device/apparatus, and the method of forming the piston assembly including the technique used to fix the piston to the ring is not germane to the issue of patentability of the piston assembly itself. Therefore this limitation has not been given patentable weight. Please note that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product, i.e. the piston assembly comprising the ring fixed to the piston, does not depend on its method of production.



8. Choi et al discloses all the claimed limitations except for the magnet sleeve and ring being of the same material.
9. Nevertheless with reference to Figure 2 depicted above, Tatukawa et al discloses a mover with a magnet retainer member (5) that has a magnet sleeve and disk shaped ring portion that are integrally formed as one member. Since the ring and sleeve are part of the same member, they are formed of the same material.
10. It would have been obvious to a person having ordinary skill in the art at the time of the invention to form the magnet sleeve and ring of Choi et al of the same material as suggested by Tatukawa et al as a matter of appropriate design choice for the materials of the two components. Note that it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art (MPEP 2144.04 (V-C)).

Art Unit: 3746

11. In Re claims 2-6, Choi et al modified by Tatukawa et al as applied to claim 1 discloses all the claimed limitations. In accordance with MPEP 2113, the method of forming a device is not germane to the issue of patentability of the device itself. In this case, the claim is to a piston assembly which is a device/apparatus, and the method of forming the piston assembly including the technique used to fix the ring to the piston or magnet sleeve is not germane to the issue of patentability of the piston assembly itself. Therefore this limitation has not been given patentable weight. Please note that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product, i.e. the piston assembly comprising the ring fixed to the piston and magnet sleeve, does not depend on its method of production.

12. As best understood, Claims 7 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al (US PG Pub 20020057973 A1) in view of Tatukawa et al (US Patent 4,701,654 A) and further in view of Lenton (US Patent 2,619,817 A) and Henry et al (Book titled "Welding Metallurgy", see NPL reference on Form – 892)

FIG.2
(PRIOR ART)

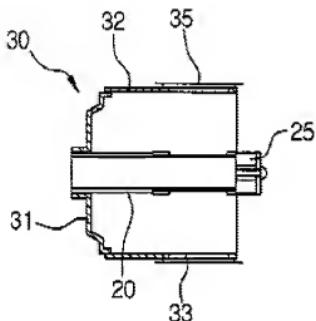
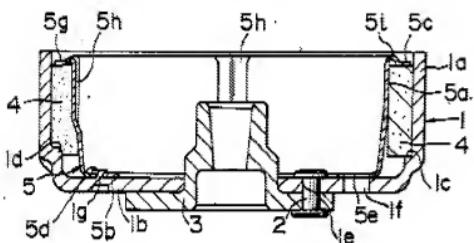


FIG. 2



13. In Re claim 7 and 11, with reference to Figure 2, Choi et al discloses a piston assembly (Paragraph [0026]) comprising:

- a hollow cylinder shaped magnet sleeve (32) having a bent portion (31) inwardly bent to one end of a hollow space thereof, and a magnet (33) bonded together by magnet cover (35) on the external circumferential surface
- a hollow cylinder shaped piston (20), insertedly equipped in the hollow space of the magnet sleeve as depicted

14. However, Choi et al does not disclose a fixing member inserting hole in the bent portion of the sleeve, a flange in the piston also with a fixing member inserting hole, a fixing member to fix the bent portion of the magnetic sleeve and the flange part of the piston together.

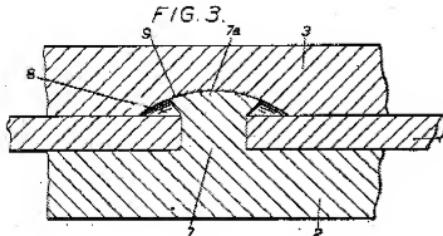
15. Nevertheless, with reference to Figure 2, Tatukawa et al discloses a mover comprising:

- sleeve (1) with a bent portion having a fixing member inserting hole for a rivet (2)
- a flange for a hub (3) with a fixing member inserting hole for a rivet (2)
- a rivet (2) inserted into the fixing member inserting holes, and fixing the flange to the bent portion of the sleeve.

16. It would have been obvious to a person having ordinary skill in the art at the time of the invention to form a flange integral with the piston of Choi et al, form a fixing member inserting hole in the flange and another fixing member inserting hole in the bent portion of the sleeve, and fixing the flange and bent portion with a rivet as taught by

Art Unit: 3746

Tatukawa et al as an alternate design choice for fixing the bent portion of the sleeve to the piston for the purpose of forming a secure joint.



17. Choi et al modified by Tatukawa et al discloses all the claimed limitations except for the fixing member being "fusion fixed" to the magnet sleeve by an applied electric current that melts a portion of the member (rivet) thus forming a connection element.
18. However, Lenton discloses rivet like protuberances that are fused to secure multiple components together by spot welding (Column 3, Lines 55-58). In addition Column 3, Lines 64-72 state: "The fused, comparatively soft steel of the protuberances 7 is upset and caused to spread to the extent of filling up or partially filling up cavities 8. Accordingly, and as shown in Figure 3, the projecting formations 7 in effect simulate rivets, the fused outer ends 7a of which are enlarged and flared like the hammered ends of rivets". In addition, Henry et al discloses on page 54, Line 12 (under the heading "Spot, Seam, and projection welding") that current is passed through the pieces, and on page 55, under the heading "Upset Welding", lines 8-9 that molten metal (formed as a result of current) is forced out of the junction.

19. It would have been obvious to a person having ordinary skill in the art at the time of the invention to form the rivet of Choi et al modified by Tatukawa et al using the suggestions of Lenton further described in Henry et al as a matter of suitable design choice for forming rivets by localizing the pressure and current (Page 54-55 of Henry et al) to form a more robust joint.

20. In Re claims 8 and 12, Lenton and Henry et al disclose that the fixing member can be fused by current and that the "protuberances" are made of soft steel which is suggested to be capable of being fused.

21. In Re claims 9 and 13, Tatukawa et al depicts that the fixing member is entirely rivet shaped.

22. In Re claim 10 and 14, Choi et al, Tatukawa et al, Lenton, and Henry et al as applied to claims 7 and 11 discloses all the claimed limitations. In accordance with MPEP 2113, the method of forming a device is not germane to the issue of patentability of the device itself. In this case, the claim is to a piston assembly which is a device/apparatus, and the method of forming the piston assembly including the technique used to fix the bent portion of the magnet sleeve, the flange and the fixing member is not germane to the issue of patentability of the piston assembly itself. Therefore this limitation has not been given patentable weight. Please note that even though product by process claims are limited by and defined by the process,

determination of patentability is based on the product itself. The patentability of a product, i.e. the piston assembly comprising the magnet sleeve, flange and the fixing member, does not depend on its method of production (electrical resistance welding method).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawahara et al (US Patent 6,273,688 B1) and (US Patent 6,565,332 B2) disclose two more configurations of reciprocating pistons. Rieger et al (US Patent 4,759,110) discloses a method of shrink fitting two components. Yoneda et al (US Patent 5,399,804 A) discloses that a laser welding method can be used for joining two components.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

DGK